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ABSTRACT

This paper integrates the results of a comprehensive literature search on the topic of the knowledge based economy with a preliminary analysis of responses about the knowledge based economy from a Canada-wide survey of members of the Canadian Association for University Continuing Education (CAUCE). A knowledge based economy survey was developed based on ideas from the literature, tested on 15 staff members at 2 universities, and mailed to more than 500 CAUCE members. Sixty responses were received for a response rate of 12%. The literature and the feedback from the survey indicate that the knowledge based economy is making its presence felt in university continuing education more and more. The only collective definition that emerged from the CAUCE survey supported that highlighted by the literature, but a consistent understanding did not always guarantee support for the perspective. The challenges of establishing an effective internal learning culture, meeting the demands of the global market, and keeping abreast of the ever changing needs of clients and employers were not clear cut. The results of subsequent analyses of CAUCE member responses will incorporate comments from the presentation at the CAUCE meeting. (Contains 91 references.) (SLD)

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Linking the Knowledge Economy to Prosperity in Continuing Education: A Preliminary Analysis

Research Paper for the 47th Annual Conference of the Canadian Association for University Continuing Education June, 2000

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Linking the Knowledge Economy to Prosperity in Continuing Education: A Preliminary Analysis

Introduction

The European Union is promising to create a "digitally literate Europe" with every citizen on-line (Information and Society Promotion Office, 1999). Similar programs have been initiated in North America by President Clinton in the United States, and in Canada by the Advisory Council on Science and Technology. These initiatives are in response to a global increase in the use of information and communication technologies and its corresponding effects on the nature and structure of economies, education and government.

Few sectors have felt the dramatic effects of the information age more significantly than university education, and in particular, university continuing education. In the last 20 years there has been a dramatic increase in the demand for technologically capable post-graduates with skills that can manage new and faster ways of collecting, processing and sharing information. Such demands upon knowledge workers have made the concept of "life-long-learning" not just a matter of personal fulfillment, but of professional imperative.

However, all is not rosy in this world of seemingly limitless knowledge. The political, social and economic pressures of our time have influenced the role and nature of education and an emerging paradigm is now changing the traditional question of "how do university CE units impart knowledge to others" to "how do university CE units do business"?

The theme of this conference: *Positioning Ourselves in the Knowledge Based Economy: The Business of Learning*, reflects this changing perspective and provides a timely opportunity

for healthy discussion and debate of the issues. In this draft research paper, the results of a current, comprehensive literature search on the topic is integrated with a preliminary analysis of some of the response from a Canada-wide survey of CAUCE members, focusing on the impact that the knowledge-based economy has on university continuing education. The final paper, which will be mailed to participants after the conference, will incorporate the comments of Dr. Norm Shulman, Rapporteur of the conference research session, as well as include the highlights from the discussion at the session itself.

We acknowledge that this is only one perspective of many, and that there are other equally important educational paradigms that exist today. Nevertheless, our objective here is to provide a synoptic and critical response to the some of the themes of the knowledge-based economy literature, and to suggest a general strategy for how university continuing education units in Canada might respond within what appears to be a rapidly developing ideological shift.

Methodology

The project began by establishing a set of attainable goals for the report and presentation. These goals intended to:

1. Collect current information about the knowledge-based economy and its impact upon Continuing Education
2. Sample the CAUCE membership to find out if there is a common understanding of the term "knowledge economy" as it relates to Continuing Education
3. Find out if there are patterns that emerge from CAUCE members' collective experience of working in Continuing Education at universities in Canada
4. Offer a list of strategies and recommendations to help members to become more successful at the business of learning

A comprehensive literature search was undertaken and consistent themes were identified and used to form the basis of a 10 question survey. Respondents were encouraged to answer questions openly, and to provide as much or as little verbatim as desired.

A basic qualitative analysis framework was established, based upon established criteria, to organize and interpret the data. First, the responses to the last question, pertaining to a subjective interpretation of knowledge economy, were divided into three categories based upon the use of pre-established keywords, phrases and/or concepts that reflected an understanding of the term "knowledge economy" consistent with that found in the literature. Responses that reflected an understanding of the term through frequent use of pre-established keywords, phrases or concepts consistent with the literature were classified into Category A. Those responses classified into Category B represented a unique or original view of the term, with use of keywords, phrases and/or concepts other than those pre-established. Finally, those responses that contain definitions of knowledge-based economy that were contrary to those identified in the literature, contained an extremely minimal response or a professed lack of understanding of the term were classified into Category C. This classification was made in order to see how respondents' perception of the knowledge economy paradigm might differ from that found in the literature and to identify any other consistent patterns that might emerge as a collective definition. All categories were then compared, question by question, for any conceptual similarities. Finally, strategies, suggestions or statements of advice were identified in the responses and noted separately.

A paper version of the survey was pre-tested on 15 support staff, professional staff and administrators who worked in various capacities in Continuing Education at the University of Guelph and McMaster University. These pre-test responses were not included in the final

sample, nor were the pre-test respondents re-sampled with the final questionnaire. Based upon the pre-test responses and feedback about the questionnaire itself, the survey was modified and put on the World Wide Web for electronic submission, and a data base was set up to automatically log response. Every effort was made to prevent duplication or accidental multiple response. E-mail addresses for over 500 CAUCE members were obtained. Individuals were sent information by e-mail about the project and the survey URL with a request to respond by a certain date. An option for a physical copy of the questionnaire was also provided upon request and individuals were able to respond via FAX or "snail mail" if they preferred. One week prior to the cut off date, a reminder e-mail was sent to everyone in the sample frame.

At the cut off date, the response rate to the survey was 12% (60 responses). Although this response was less than ideal, a wealth of information and recognizable patterns were still easily identifiable, and the goals of the project were deemed by the researchers to be acceptably realized. In addition, although respondents were primarily administrative (60%), response from professionals (18%) and support staff (17%) was deemed adequate to identify unique perspectives and patterns emerging from the data. Four respondents did not indicate their employment status. The response by region was: BC 15, Ontario 14, Alberta 11, Nova Scotia 9, Newfoundland 3, Manitoba 2 and Quebec 1, with 2 respondents not indicating where they resided. Twenty-seven percent of all responses were classified into Category A , 35% into B and 33% into C. Five percent (three respondents) did not answer the question.

Preliminary results of the survey have been integrated into this report, and a list of recommended strategies that emerged from both the data and the literature is also discussed. The results of this survey describe the experience and opinions of a self-selected group of the CAUCE membership, and are not intended as inferential to any other population.

The Knowledge-Based Economy: A Brief Background

From the 1950, research and development programs have grown in industrialized countries in the areas of science and technology, particularly in the areas of military and aerospace. More recently, research and design has focused on ICT and biotechnology. This trend has created an economic sector called the "knowledge industry", as first described by the economist Fritz Machup in the 1960s. In the knowledge industry, the generation and application of knowledge is the primary product. Since the 1960s, some economists have noted that it is difficult to attach a dollar figure to the knowledge industry. In an otherwise conventional economy, there is no precise method by which to account for the economic contribution made by knowledge. This accounting problem persists. The Organization for Economic Cooperation and Development (OECD), for example, reports that they have yet to develop a complete and correct set of economic indicators to fully assess how much of the economy is devoted to the generation and transmission of knowledge, or to the total value of that knowledge in terms of its broader social rates of return (OECD 1996, 8, 41). They do, however, estimate that in OECD countries, as much as 50% of the gross domestic product is knowledge-based (9).

The contemporary KBE takes the concept of the knowledge industry further. Now, knowledge and information are themselves being treated as capital. In effect, this means that their raw value is now recognized in the calculation of inputs into an economy. On the one hand, this view is odd, because information does not share the characteristic of scarcity in exactly the same way that other input resources are conventionally thought to be scarce. On the other hand, the idea of knowledge as capital seems necessary to account for the now commonplace commodification of knowledge that takes place independent of subsequent applications of the knowledge in industry where its use value is readily apparent.

Viewing knowledge as capital has lead some observers of the KBE to conclude that the KBE involves nothing more than the commodification of ephemeral products of imagination. For example, the on-line magazine *Wired* suggests, using Microsoft as an example, that the KBE means that capital is no longer located in durables (Wired 2000). This is partly true – the focus on knowledge as capital does suggest that capital is no longer found exclusively in durables, but Microsoft still produces *something* – namely purchasable, copyrightable, ownable software suites. The recent antitrust decision against Microsoft is based precisely on the decision that Microsoft's *products* – physical, saleable products – are dominating the market as a result of monopolistic marketing and take-over strategies.

So what is new in the KBE is that knowledge is reconceptualized as something with value in its own right – it becomes capital in a market system. Like the economy that pre-dates it, however, the KBE continues to involve the production, distribution and sale of traditional goods and services. Ultimately, what is different about the two economies is that the KBE, unlike the economy that pre-dates it, takes, what it considers to be, the full appreciation of the *human role* in shaping, through innovation and communication, the tempo and mode of economic development. Since at least the 1980s, it has been fashionable to talk about human capital. The KBE zeroes in on the fact that it is what people know and how they use it that makes human capital itself worth something.

What is a Knowledge Worker?

The knowledge-based economy comes with its own specific set of employment conditions, many of which are necessary for accessing and transmitting information. First, knowledge workers must have basic knowledge of how to access digitized information using various information and communication technologies. ICT know-how assumes that there must

be some basal level of technical proficiency necessary to join the global KBE, as well as the ability to continuously adapt to new technologies. Second, it is necessary that a knowledge worker is able to access and use various ICTs. This is particularly relevant in the global context where the digital divide follows the division between industrialized and developing countries. Even within industrialized countries such as Canada, a digital divide persists between rural and urban, northern and southern, and between aboriginal and other populations. Third, it is commonplace in the KBE for employees to have high levels of meaningful interaction between colleagues. It has been suggested that interpersonal, non-technically mediated communication facilitates creativity and problem-solving in the workplace.

Employees in the KBE work under the above conditions for specific reasons. Information, while necessary for industry, universities and governments, is not a scarce resource in a conventional sense. The internet makes information readily accessible, and, as a result of this high level of accessibility, information can be freely exchanged. Free information exchange is a background condition of the KBE. It is, however, a common misunderstanding to equate the KBE with information and the means of exchanging it. To do this results in characterizing the KBE worker as some kind of data processor. Instead, what is unique about being employed in the KBE is the need for one to have an ability to know what to do with the vast, even overwhelming amount of information that is available.

A Working Definition of KBE

There are several common themes associated with the KBE that can be identified in the literature. Although not necessarily new ideas, concepts and keywords such as "learning culture, innovation, competition, commodification of information, flattened organizational hierarchies,

globalization, learning communities, team work, self-directed learning and strategy plan" are found consistently in the discussion.

The first goal of the research project was to find out if there was a common understanding among the CAUCE membership of what has sometimes been described as a very ambiguous term: The Knowledge Based Economy. As described above, Category A respondents were identified by their use of a set of consistent key terms and ideas associated with the knowledge-based economy that matched that found in the literature. These included the use of words associated with information and communications technology (ICT), a focus on the creation and dissemination of information and knowledge, and expression of the idea in the knowledge-based economy, *knowledge itself has value*. The latter idea is described in the literature as the "commodification of knowledge" (OECD 1996, Menzies 1998). Many respondents said that, consistent with the KBE paradigm, CE units must work in what has been described as a "just-in-time" environment, using best ICT practices to deliver relevant knowledge to specific audiences in a timely manner. This resonates with a common view held in the literature that developments in ICT, to a point, structure the knowledge based economy. Respondents linked the importance of ICT in the KBE to the competitive advantage that lies in having this wealth of knowledge ready for efficient distribution, frequently leading to innovation.

In contrast, no collective alternative definition emerged from the respondents in Category B and C who made up the majority. In fact, in many cases respondents from these categories expressed their own concern about a lack of a clear understanding of the term. It may be interesting to note that the position titles of respondents were fairly evenly distributed between Categories A, B and C, suggesting that there may be a wide-variability in the familiarity of the tenets of the KBE paradigm at all levels of the CE organization. Since no other consistent

definition emerged from the data, a greater, although not exclusive, focus at this preliminary stage, was placed on the responses from those in Category A who were familiar with the concept, leaving a more in-depth analysis of the wealth of differing perspectives for another paper.

Not all Category A respondents found favour with the KBE. In some cases descriptions of the KBE were followed by critical comments. Some argued that it is just a fad that is replacing the paradigm of 'Total Quality Management' and reflects a society-wide obsession with ICT. Others speculated that the KBE means little more than a fascination with the movement of small units of information that become rapidly outdated. It was felt that this obsession with ICT would inevitably lead to the adoption of the tenets of the KBE paradigm, resulting in the substitution of knowledge and wisdom for great volumes of "mere information." Others, still, suggested that the KBE creates divisions between wired and technically literate individuals with those who, for whatever reason, are less ICT literate or have restricted access to the internet. For some, KBE is thus associated with an increasingly deepening digital divide. Yet, for others, KBE provides increased access to ICT and more equitable access to information.

One criticism of the KBE suggested that it is part of the rhetoric promoted by information/education industry, defining knowledge in terms of a commodity. In this particular respondent's opinion, commodification of knowledge needlessly raises the education requirements set by employers and shifts the training burden from the employer to the individual thereby legitimating layoffs and discriminatory hiring practices.

The (Lifelong-) Learning Culture

> *Most leaders instigating change are like gardeners standing over their plants, imploring them: "Grow! Try harder! You can do it!" But if a seedling has no room to grow, no soil, and no water, it will never become a tree. Similarly, if organizations don't foresee the obstacles that arise naturally wherever growth and learning take place, their change initiatives will fail* (Senge, 1999).

Literature on the knowledge-based economies suggests that more than ever before, it is extremely important for individuals and organizations alike to engage in life-long learning. Continuing education units are experiencing an increase in the number of individuals and organizations seeking professional development and accreditation programs for themselves and their employees. There is a greater demand from clients for cutting edge strategies and new ideas to be incorporated into program development. Enveloping our clients into a learning culture that encourages them to keep abreast of change and innovation through education is part of the challenge that university CE units are currently facing. However, the survey data suggest that it is difficult to develop and support a learning culture for CE students/clients if the employees within a given CE unit are not themselves able to keep abreast of the innovative strategies and ever changing tools of their own trade. It is logical to assert that if CE Units promote the importance of developing a positive attitude to life long learning to their clients, then CE units themselves must "practice what they preach" in support of the development of a strong internal learning culture in their own environment.

A supportive learning culture, from a KBE perspective, requires tearing down departmental hierarchies, making information accessible to all, empowering employees to act on new information as it is created, and strengthening team building. There are four key reasons emerging from the literature that attempts to justify why a learning culture is so important both internally and externally:

1. Many organizations (including CE units) are working hard to exploit what they know in order to gain competitive advantage. Information is the most valuable organizational resource today
2. Keeping on top of changes in information is the greatest organizational challenge
3. People who can learn quickly will be in greater demand
4. Organizations that can keep their most talented learners, and develop a strong and effective learning culture will enjoy a competitive edge over others in their field

The importance of a commitment to lifelong learning in establishing a learning culture both within CE units and for outside client groups cannot be over-emphasized, but it is often not put into practice. As Zhao puts it in connection with the brain-drain and employee retention strategies,

> *[a]lthough there is much talk about the importance of lifelong learning, we are in fact only beginning to put theory into action. To succeed in the knowledge-based economy, relieving these points of stress and modernizing our formal and informal learning systems are clear priorities* (Zhao 2000, 7).

In a climate of opportunity and innovation, retaining technically skilled employees is often a significant challenge to management. Although skills shortage is not a problem now, Canadian demographic factors, including clumped retirements and the comparatively smaller group of young adults entering the work force, pose the threat of shortages in certain job sectors. The Advisory Council argues that government sector councils should facilitate the development of human resource management programs that encourage lifelong learning, which can help small and medium-sized enterprises (SMEs) in particular to thrive. Encouraging lifelong learning is critical if Canada is to retain highly skilled workers.

To meet this objective, the Advisory Council has four recommendations. First, lifelong learning must be a "national priority" that is fully supported by government policies related to training and education. Second, employers, particularly SMEs must be helped by government programs to upgrade the skills of their employees and managers. Third, Canada must strive to be a world leader in the development of learning technologies. Fourth, these technologies must be accessible to all, especially Aboriginal communities (8). The ACST also recommends enhancing

the entrepreneurial and innovate spirit in Canadian business, and establishing "Enterprise Canada", an organisation that will facilitate the integration of skills and enterprise development within the private sector.

Many CAUCE survey respondents emphatically report that they work in a well-supported learning culture. Strategies such as financial support for attending conferences, moral support for staff to participate in PD activities, regular management meetings, establishment of an on-site library, provision of in-house professional development courses and information sharing presentations and seminars were all noted as activities that show how CE units typically support a learning culture. One respondent even reported the development of an annual personal training plan for all employees in his/her unit, backed up by financial support for professional development. Some also included informal learning gained at staff parties, around the water cooler or passively through work experience with clients as evidence of a learning culture. Nevertheless, research and feedback suggest that there are key obstacles that many adults face with respect to gaining opportunities for formal learning, and these barriers can have implications for staff within a CE unit in much the same way that they impact upon their clients. Such barriers include: cost of programs, lack of time to participate, lack of employer support and lack of family support (Brawer, 1996; Kerka, 1995; Bers & Smith, 1991).

In the survey response, some administrators state that their units are able to offer moral support for professional development, but stress the difficulties of finding the financial resources to offer more than that. Other respondents label their unit as "elitist" because it focuses support on faculty and/or professional staff but not on all staff . Some note that in their unit there are learning opportunities available for staff, but no time is made available for people to take advantage of them. These concerns suggest that for some CE units, the importance of the

development of a 'learning culture' may not always have the high priority internally that is ascribed to it through CE marketing to clients outside of the unit.

Strategies for Continuing Education

Although the KBE is seemingly no more than a conceptual paradigm, it is also deeply rooted in practical application. The second question posed to CAUCE members asked for two strategies that were most useful to them in developing new continuing education programs. Primary research and academic literature outlining suggested paths that Continuing Education units might follow to meet with success in the knowledge based economy was difficult to find. Much of it came from the business sector, who applied consistent and traditional rules of marketing and business practice to professional development and adult education. However, the following are the top 10 strategies that were repeatedly noted in both the literature, and by CAUCE members (from all categories) themselves. These recommendations represent a practical approach to achieving success in today's ever changing educational arena through the eyes of a KBE perspective. Some of the strategies seem fairly obvious at first glance. However, regional and institutional differences in policy and practice, coupled with the rich resources brought by a diverse, dedicated team will no doubt result in an innovative "spin" on these recommendations; helping Canadian University CE units to successfully navigate through the challenges of competition and change.

Establishing a Learning Culture in your CE Unit

> *...more funds available for programs like employee training [show that] ...employees are happier and we have noticed that more customers are giving us their business - and that obviously has revenue implications* (Chisholm, 2000).

> *Create a learning organization where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together* (Senge, 1990 in American Productivity & Quality Center, 2000).

1. Involve employees in the development of a shared vision
2. Encourage and foster teamwork
3. Make management of knowledge a business strategy
4. Leverage knowledge as a product or within your product.
5. Make an inventory of knowledge
    - What information do I have that others need?
    - What information do others have that I need?
    - What does this new data mean to us and our customers?
    - What's the best way to communicate in each case?
6. Share information freely so that everyone has the information they need to make informed decisions
7. Be clear as to who has the responsibility to collect and disseminate information
8. Work constantly to build a learning environment. in which continuous improvement is the guiding principle
9. Practice what you preach - make it possible for CE unit staff at all levels to engage in life-long learning/ professional development
10. Use metaphors from the "new science" to improve knowledge management

Strategic Marketing

> *It means making sure your actions fit with the directions you and your co-workers have agreed will lead to success - and it's essential if you want to achieve outstanding results* (Vaughan, 2000).

1. Have a strategic business/marketing plan
2. Concentrate on your best customers
3. Focus energy and attention on your good events - do them more often and build up their value.
4. Put a healthy focus on the new
5. Mail early and mail often - well in advance of programs (at least 14 weeks)
6. Test for success - evaluate etc.
7. Track everything - know when to adjust your approaches to maximize efficiency and response.
8. Shift from products to markets (need to be customer driven not product driven).
9. Move the whole organization to the internet - brochures, registration, services and information etc.
10. Ensure that there is system wide promotion and a 'buy in' for distance education by partnering with other academic departments programs. Develop broad based consultative processes to ensure acceptance within the Univ. community.

Program Innovation and Development

> *This unit must be protected from the corporate demands, success criteria and volume demands of the mainstream so it can develop new markets* (Archer, Garrison & Anderson, 1999).

1. Respond quickly to business needs; get participation from business in course development
2. Include soft skills in courses, such as leadership, sales and business skills
3. Create learning communities; move from teaching to helping adults learn
4. Provide adequate technical support for users and be aware of barriers to on-line learning
5. Grow incrementally not too quickly: Programs that grow by more than 15 percent a year are probably causing themselves problems
6. Evaluate your performance
7. Be innovative - planned entrepreneurship. Twenty to thirty percent of your programming every year should be new
8. There is a move toward company specific custom programs
9. Ensure senior management support from the beginning
10. Bundle components of existing programs to create new programs leaving smaller parts to develop

Developing and Getting the Most out of Partnerships

> *Partnerships will continue to reshape organizational landscapes* (CAUCE Survey Respondent, 2000).

1. Make alliances/partnerships that bring together providers and target groups
2. Develop clear expectations of partners, granting organizations etc.
3. Involve industry or business
4. Use rural and northern coalition contacts to seek out ideas
5. Establish an advisory group involving a good balance of internal and external stakeholders at all levels
6. Obtain ongoing department support
7. Establish reliable networks
8. Link to the market through your advisory committee
9. Consultation with our constituency - and partner with curriculum providers
10. Net work with key informants and other interested bodies that need to know about development; get them involved in development and delivery

Handling the Threats and Opportunities of Globalization

> *Unless Universities change their business model, they will be permanently leapfrogged by computer competition* (Meister, 2000 personal communication).

> *Every organization needs to prepare to compete in the global marketplace. You may not choose to promote your products and services in the international markets, but you cannot prevent others from doing so in your back yard* (Vaughan, 2000).

1. We are developing partnerships with post secondary institutions around the world that will allow us opportunities to expand further, developing our key programs and reaching a wider student group
2. We start by moving to local, then to provincial to national and next will be north America and beyond
3. Support for faculty, particularly in regard to familiarization with and training on new technologies for course delivery has become a priority
4. Changes need to be made to the way that course materials are distributed to improve services to students in distant lands. There is a need for staff training in cross cultural understanding
5. We are reaching students who began their studies with us, but moved abroad to pursue work
6. Students are now able to get a degree from our institution from abroad
7. Sometimes it stretches us thin and makes us vulnerable on the home front
8. Our university has an international program coordinator who promotes both formal courses and CE openings
9. We have a demand from foreign students who now live in our own country
10. There will be an increase in the focus toward issue-based programs (e-commerce, change management etc.; An e-learner is an e-customer with the same expectations and needs for accessibility

Innovation

The Oxford Dictionary definition of "innovation" suggests a practical application of new methods and new ideas. Indeed, innovation was a consistent theme throughout the KBE literature, viewing knowledge management as the key to innovation, and innovation, in turn, the key to survival in a competitive market. In the survey, the question was asked how CAUCE members considered their CE unit to be 'innovators" in training and development.

Many respondents across all categories were somewhat similar in their feedback, citing strategic directions in areas of on-line, self-directed and experiential learning, development of learning communities, industrial partnerships and global outreach. These are all new and exciting innovative directions promoted within the KBE perspective literature. However, there were also some unique activities reported. A few respondents stated that they were offering CE courses at a graduate level to reach a more highly educated or specialized clientele. Innovation

through research into increasing student enrolment, tapping into alumni expertise and need, aboriginal education and the development of benchmarks and standards were also reported. One respondent highlighted the development of modular learning packages which could be used in different ways for different audiences. However, particularly interesting was a suggestion that to offer CE successfully in a new, but traditional way, was very innovative in light of the pressures and influences of changing paradigms.

Globalization

One theme frequently identified by Category A respondents included the importance of being able to find relevant markets for knowledge distribution in a global marketplace, and being able to reach those markets using appropriate ICT. This trend toward globalization was expressed by many survey respondents as completing a triangle consisting of globalization, ICT and knowledge. The perception, in line with that expressed in the literature, is that with the world-wide demand for knowledge and the speed and ease with which it can be transmitted, the KBE forces individuals to adapt to an expanded and electronically mediated marketplace. This was evident, particularly in the discussion of globalization, where it was mentioned that those working in CE would have to be adaptive if they were to keep up with the shifts in the marketplace. Category A respondents also claim that CE units must track global market demand for knowledge with some even suggesting that CE units must take responsibility themselves to be creators and transporters of new knowledge from the university to the public via in specialized delivery formats.

Adopting this viewpoint suggests that university CE units could poise themselves to be unique sources of knowledge generation and delivery in the KBE, as if they are knowledge industries in their own right. This view is consistent with and promoted by the findings of

Industry Canada's IT and Knowledge-Based Economy Summit that says "[i]n the KBE, the ability to generate and use knowledge – to innovate – is not only a determinant of wealth, it is also the basis of comparative advantage. Knowledge is the fundamental means to improving the efficiency of production and distribution processes, improving the quality and quantity of products, and increasing the choice of products and services for consumers and producers (1997, 1).

Is the Demand for "Hard" Technical Skills or "Soft" Competencies?

William R. Brody, President of the Johns Hopkins University argues that in the KBE, expertise matters most (Brody 1999). He defines knowledge as not mere information, but that information which is sorted and compiled to provide the user with insight or understanding about a problem. Expertise is the "quality which transforms ubiquitous information into useful and economically valuable knowledge (8)." As one Category A respondent said about expertise, "I look forward to when 'wisdom economy' enters our vocabulary." According to Brody, universities play a critical role in generating and disseminating knowledge, and are also a training ground for future innovation:

> *I should point out that there is a mistaken impression, particularly among state and local government officials that universities should be more focused on educating their students to have the skills required for the jobs of today. Your graduates need to be 'job-ready' they say (whatever that means!). The problem with following the 'job-ready' dictate is that we will create graduates who are trained, not educated. They cannot adapt when the skills they have acquired become obsolete. With the half life of knowledge approaching five years – even less, in some fields – we must impart in our students the basic skills of learning how to learn, so that they can continuously adapt to the rapidly changing needs of the marketplace and renew their expertise throughout their lifetime* (Brody 1999, 5).

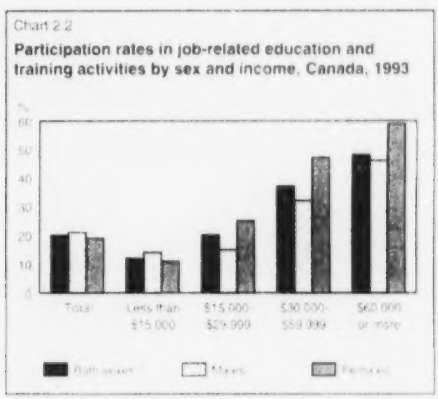
Brody's remarks are instructive, for knowing how to function in the KBE means that we do not confuse the *tools* of the knowledge-based economy with its *content*.

In its 1996 report, *The Knowledge-Based Economy*, the OECD argued that the ability to distinguish between various types of knowledge is critical for success in the KBE (OECD 1996). "Knowledge codification", as they call it, requires that distinctions are made between knowing what something is (factual knowledge), knowing why (causal, possibly scientific knowledge), knowing who (interpersonal resourcing), and knowing how (transactive knowledge or judgment). This codification structures the way in which knowledge is commodified and traded in the KBE. Working in the KBE requires individuals to possess "...capabilities for selecting relevant and disregarding irrelevant information, recognizing patterns in information, interpreting and decoding information as well as learning new and forgetting old skills" (OECD 1996, 13). So-called knowledge workers must function as information nodes or filters that are highly adaptable to changing technologies and contexts of knowledge use. The half life of skills possessed by knowledge workers has become dramatically shortened by ICT because "...knowledge and skills have become more important as inputs, and are more perishable" (Lanfranco 2000). The shortened half life of skills has contributed to an increase in part-time and short-term contract work that balances the reduction in hiring to full-time permanent positions in Canada (Statistics Canada, May 2000). The KBE promotes a "contingent work force" that can be modularized and shifted from sector to sector as the demand for certain skills rises and falls (Menzies 1998, 6).

Labour markets reflect these changes. From 1970 to 1994, growth in total manufacturing declined in OECD countries and was offset by increased knowledge-based work (OECD 1996, 17). Employees with strong educational backgrounds are generally more competitive in the contemporary labour market (Ontario HRDC, 1999). Remaining competitive is a challenge, particularly for mid-career professionals who have focused on work experience and ignored educational upgrading. They may lose their competitive edge without further education because

of a general rise in the average education achieved by Canadian employees in recent decades. In 1971, approximately 10 percent of workers employed in full-time, permanent jobs had post-secondary certificates, diplomas or degrees from colleges and universities. By 1991, this rose dramatically to nearly 50 percent (Ontario HRDC, 1999). The motivation for advancing one's education is clear, as the following table from HRDC demonstrates, since there is a clear relationship between income and educational advancement.

Table 1: Participation Rates in Job-Related Education and Income (HRDC 1997, 27)



The increasing average age of the workforce, when combined with its increasing mobility, has a pronounced effect on how workers position themselves in the labour market. As Kapsalis (1998) reports, the age premium on wages - the percentage difference in wages for young and old groups of employees - can be attributed to two factors. First, employers are always willing to pay higher wages for employees with considerable work experience. Second, older employees benefit when they combine their work experience with employment-related education which up-dates or enhances their skills. Older employees thus receive an age premium because their employers are willing to pay more for the conjunction of work experience and

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education than they would be willing to pay younger employees who have education but less work experience.

The question remains, which competencies are worth developing in the KBE if the half-life of knowledge and technical skills is being reduced? Many Category A survey respondents thought that the most important distinction in the codification of knowledge was between knowing *how* and knowing *that*. Some feared that the popular emphasis on technical knowledge (knowing *that*) would replace the know *how* that is necessary for making sound judgments. "Knowing how," one respondent said, is a "real world commodity", in other words, it can be bought and sold. Jeremy Madrick answers his own question, "how new is the new economy?" by saying that "…in an age where information is so widely available, it is not the information that is valuable, but what is done with it" (1999, 18). The point is that valuable knowledge is highly context-sensitive, and success in the KBE as mentioned before, depends on one's capacity to make fine distinctions between knowledge that is innovative and useful and that which is old and less useful (Lanfranco 2000, 4). In what might be a surprising outcome to some, the Advisory Council on Skills and Technology (1999) surveyed five "strategic industry sectors": aerospace, automotive, biotechnology, environmental technology and ICT and found "…no current evidence of a generalized and persistent shortage of *technical skills* (ACST 1999, 2)." What they did find was that:

> *In sharp contrast with the technical skills picture, but equally critical to the competitive success of Canadian industry, is a persistent shortage of people who combine strong technical abilities with essential skills (e.g. communications and teamwork) and management skills (e.g. cost control and budgeting). In all five sectors, executives reported that finding technically competent people who can work in teams, communicate effectively and apply their technical knowledge to real world business problems, is a significant challenge* (2).

Industry Canada has discovered a similar trend in the KBE:

> *The KBE is generating strong demand for those involved in acquiring and applying knowledge, people who know how to learn and who continue learning by upgrading existing skills and acquiring new skills – that is, knowledge workers. The KBE requires skills that are broad and highly transferable such as problem solving and the ability to learn* (Industry Canada 1997, 3).

Therefore, post-secondary graduates are often technically competent, but frequently lack the "softer management" and "essential skills" that will enable them to succeed in the KBE.

Recent research by the economist Robert Allen for the Social Science and Humanities Research Council has confirmed that "soft-skills" are the most relevant KBE competencies to possess in Canada. His findings demonstrate that arts and social science graduates who possess these competencies do very well in acquiring professional managerial positions. By contrast, "specific skills training – by itself – has no pay-off in the knowledge-based economy" (Allen 1999, 4). Allen argues that this finding flatly contradicts the "techism" view of the KBE that holds that advantage of the KBE lies in advancements in technical skills alone. Instead, the widespread availability of computers, and the fact that an increasing number of people possess the skills to operate them, means that the competitive edge lies in acquiring other competencies:

> *While the production of computers and software requires people with many technical skills, the use of computers requires the general skills taught in social science and humanities programs. The use of computers affects skills requirements profoundly. The issue is not whether an employee knows how to operate Excel, so much as it is whether the employee can apply a model to a problem, deal effectively with clients and members of a management team, write and speak clearly, and make informed and independent judgments* (Allen 1999, 18).

In addition to these non-technical skills, the Institute for International Education argues that workers in the KBE must extend their competence to work transnationally and to gain knowledge of other countries, customs, languages, global and regional politics (IIE 1997).

Unsolved Issues

The advent of the knowledge-based economy presents new opportunities for university continuing education. Fundamentally, the literature suggests that CE units across the country may have to orient themselves to the central themes of this new economy, and will have to adopt many of the strategies we have described. This change is not without its pitfalls. Chief among these, according to the CAUCE survey respondents, is the struggle between providing socially responsible programming from a publicly mandated university in a manner which is consistent with the ever-increasing pressure upon CE units for cost-recovery programming. Are the goals of the KBE inconsistent with university CE?

Jane Cruikshank has alerted us to the potentially negative social consequences of making university CE cost-recovery, and urges us to consider how we can incorporate socially responsible programming within the cost-recovery mandate (1992; 1994). For example, a very serious gender-specific issue arises in the pursuit of programming that capitalizes on the ICT intensive nature of the KBE. Canadian women are as computer literate as men, but they have significantly less internet access: 39% of Canadian women, compared with 61% of men have internet access (Menzies 1998, 14).

Another social issue is the rising trend in customization of corporate CE. As more university CE becomes connected to industries in the knowledge-based economy, this may have profound effects on the range, cost and availability of programming that university CE units will undertake, thus potentially making continuing education available only to select groups (Lauzon 2000; see also Thompson and Lamble 2000). The Advisory Council on Science and Technology

considers growing inequities in IT access to be a serious threat to Canada's social and economic success. They recommend that private and public sectors work together to provide internet access to every home, school and business, and to transform Community Access Programs in rural and northern areas into "true learning centres". As some of our survey respondents indicated, along with increased use of ICT in the KBE, governments and educators have an obligation to keep people informed if we wish to have a civil society (see also Lanfranco 2000, 5-8).

To correct these inequities, it may be necessary to develop hybridized CE units – those that are tied into the KBE marketplace directly to generate the resources necessary to do more socially-oriented programming. This model meets the reality of the new economic paradigm in which Canadian universities find themselves without abandoning the ideals of socially responsible university extension. A prevailing concern, however, is that due to limitations of the size of some units, their resource allocation from their universities and their ability to access a restricted range of markets, adopting this model might be a luxury only a few can afford.

Conclusion

Contemporary literature and feedback from our research survey indicates that the knowledge-based economy is making its presence felt in university continuing education more and more. Having identified the main themes of the knowledge-based economy, we found that the only collective definition that emerged from the CAUCE survey supported that highlighted by the literature. However, a consistent understanding did not always guarantee support for the perspective. It was suggested that the associated challenges of establishing an effective internal learning culture, meeting the demands of an emerging global market and keeping abreast of the ever changing needs of clients and their employers was not uncomplicated and clear cut.

This paper provides just a glimpse at how the knowledge based economy impacts upon university continuing education in Canada. There are still many research avenues yet to travel. For example, it will be interesting to explore what CAUCE respondents consider to be the major competitors, obstacles and opportunities for continuing education. Issues about intellectual freedom, accessibility, culture and barriers to learning still need to be continually deconstructed and re-formulated in light of changing educational aims and contexts.

We hope that this paper contributes to the debate on the nature and impact of a changing educational paradigms, and that it provides CAUCE members and others with some valuable insight into what has become a difficult yet rewarding metamorphosis.

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